

# **St Marys River Watershed Restoration Action Strategy**

## **Part II: Concerns and Recommendations**

**January 2001**

*Prepared by*

**Indiana Department of  
Environmental Management  
Office of Water Quality**

## **FOREWORD**

The First Draft (October 1999) of the Watershed Restoration Action Strategy (WRAS) was reviewed internally by IDEM and revised accordingly. The Second Draft (March 2000) was reviewed by stakeholders and revised accordingly. This Third Draft (January 2001) is intended to be a living document to assist restoration and protection efforts of stakeholders in their sub-watersheds. As a "living document" information contained within the WRAS will need to be revised and updated periodically.

The WRAS is divided into two parts: Part I, Characterization and Responsibilities and Part II, Concerns and Recommendations.

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Matt Jarvis, Regional Watershed Conservationist  
IDEM Office of Water Quality  
100 N. Senate Avenue  
P.O. Box 6015  
Indianapolis, IN 46206-6015

[mjarvis@dem.state.in.us](mailto:mjarvis@dem.state.in.us)

# **St Marys River Watershed Restoration Action Strategy**

## **Part II: Concerns and Recommendations**

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Part II of the Watershed Restoration Action Strategy discusses the water quality concerns identified for the St Marys River Watershed and lists recommended management strategies to address these concerns.

Part II includes:

Section 1	Water Quality Concerns and Priority Issues Identified by Stakeholder Groups
Section 2	Water Quality Concerns and Priority Issues Identified by State and Federal Agencies
Section 3	Identification of Impaired Waters
Section 4	Priority Issues and Recommended Management Strategies
Section 5	Future Actions and Expectations

## **1 Water Quality Concerns and Priority Issues Identified by Stakeholder Groups**

The St Marys River Watershed contains several stakeholder groups that have different missions. The following discussions briefly describe some of the watershed groups.

### ***Adams County Soil and Water Conservation District***

The Adams County Soil and Water Conservation District conducted locally led activities that resulted in the Stakeholders developing the following priorities:

- 1) Adams County has a large number of livestock; the disposal or proper use of animal waste is a concern.
- 2) The topography and soils of the county are concerns in regards to flooding.
- 3) Concerns also exist on soil loss and movement due to erosion.

### ***Adams County Planning Commission***

The Adams County Planning Commission has been involved in the concern over Intensive Livestock Operations. In 1976, modified in 1997-98, they developed an ordinance that requires certain producers to apply for a county livestock permit. Many areas of the ordinance are more specific than corresponding State rules and legislation.

### ***Wells County Soil and Water Conservation District***

The Wells County Soil and Water Conservation District, through locally led meetings and a new process called Vision 2004. Developed the following prioritization of concerns:

- 1) The need to improve the drainage system in the county.
- 2) The development and construction in wooded areas.
- 3) Concern of runoff from sediment and chemical use.

- 4) Environmental ethics.
- 5) Pollution.
- 6) Good source of water
- 7) Different levels of control
- 8) Land use.
- 9) Pasture and grazing in waterways.
- 10) Air pollution.

### ***Maumee River Basin Commission***

Maumee River Basin Commission (MRBC) emerged in 1985 as an alliance between Adams, Allen, De Kalb, Noble, and Steuben Counties, which comprise the Maumee River Basin. The Commission is designed to assist communities in northeast Indiana to curb the threat of flooding. The MRBC is a state agency formed by Indiana Code 13-7-6.1. The MRBC provides regional leadership in planning, promoting, coordinating, and implementing flood control, conservation, and the control and development of resources such as land, water, and man-made improvements (MRBC 1993). The MRBC has several areas of concerns that have impacted the watershed. Some of the projects are listed below:

- 1) The development of a Water Resource Availability in the Maumee River Basin, Indiana
- 2) Development of an Erosion and Sediment Control Guide
- 3) Development of the Resources and Trends of the Maumee River Basin (An Introduction for Flood Control and Related Resource Management in Northeast Indiana)
- 4) Development of a Master Plan for Flood Control

### ***ACRES Land Trust***

ACRES Land Trust is a watershed Alliance/Council concerned with nature preserves and their protection. Ted Heemstra is the contact for this organization.

## **2 Water Quality Concerns and Priority Issues Identified by State and Federal Agencies**

This section presents the combined efforts of State and Federal agencies, and universities, such as IDEM, IDNR, USDA-Natural Resources Conservation Service, Ohio River Valley Water Sanitation Commission, Purdue University, Indiana University, Indiana Geologic Survey, and US Geological Survey, to assess water quality concerns and priority issues in the St Marys River watershed. This multi-organization effort formed the basis of the Unified Watershed Assessment for Indiana.

### ***Indiana's Unified Watershed Assessment (UWA)***

The UWA workgroup gathered a wide range of water quality data that could be used to characterize Indiana's water resources. These data were used in Alayers@ in order to sort the 8-digit HUC watersheds according to the present condition of the water in lakes, rivers, and streams. The workgroup used only those data that concerned the water column, organisms living in the water, or the suitability of the water for supporting aquatic ecosystems. Each Alayer@ of information/data was partitioned by percentiles into scores. The scores ranged between 1 and 5, with a score of 1 indicative of good water quality or minimum impairment, and a score of 5 indicating heavily impacted or degraded water quality. The scoring derived through the UWA process is presented in Table 2-1.

The data layers listed in Table 2-1 can be defined as:

- ◆ Lake Fishery: Large mouth bass community information for lakes
- ◆ Stream Fishery: Small mouth bass community information for streams
- ◆ Aquatic Life Use Support: The >livability= of the water column for aquatic life, determined from evaluation of chemical and physical water data, and assessment of aquatic life
- ◆ Fish Consumption Advisories: Site specific advisories based on current data
- ◆ Fish Index of Biotic Integrity: Based on fish community diversity and fish health
- ◆ Qualitative Habitat Evaluation Index: Measure of whether the aquatic habitat is suitable for diverse communities, based on visual observations
- ◆ Lake Trophic Scores: Indicator for the rate at which a lake is >aging= due to inputs of nutrients and other factors
- ◆ Sediment Potential: Indicator of potential sediment input to waterbodies in the watershed

The sources and additional information for these data layers include:

- ◆ Lake Fishery: From IDNR fisheries surveys of lakes and reservoirs from 1972 to 1994. Raw scores were averaged for all lakes in the watershed.
- ◆ Stream Fishery: From IDNR fisheries surveys of streams from 1970 to 1994. Raw scores were averaged for all streams in the watershed.
- ◆ Aquatic Life Use Support: IDEM, Office of Water Quality, Assessment Branch
- ◆ Fish Consumption Advisories: ISDH and IDEM, Office of Water Quality, Assessment Branch
- ◆ Fish Index of Biotic Integrity: IDEM, Office of Water Quality, Assessment Branch
- ◆ Qualitative Habitat Evaluation Index: IDEM, Office of Water Quality, Assessment Branch
- ◆ Lake Trophic Scores: Indiana Clean Lakes Program through IDEM, Office of Water Quality, Assessment Branch. This score was based on information gathered from sampling conducted in the 1970's and 1980's.

- ♦ Sediment Potential: U.S. Geological Survey scored the population rate of change and the 1996 Conservation Tillage Transect data. The scores were then added and normalized to produce a sediment yield indicator for each watershed.

From this scoring, it is evident that stream fishery, aquatic life use support, and qualitative habitat evaluation index are the key concerns. However all categories are of concern based on the ranking for the St. Marys River watershed.

**TABLE 2-1  
RESULTS OF THE UNIFIED WATERSHED ASSESSMENT  
FOR ST MARYS RIVER**

<b>Data/Information Layer</b>	<b>St Marys River (04100004) Score</b>
Lake Fishery	*
Stream Fishery	5
Aquatic Life Use Support	5
Fish Consumption Advisories	3
Fish Index of Biotic Integrity	*
Qualitative Habitat Evaluation Index	5
Lake Trophic Scores	*
Sediment Potential	3

Note:

The UWA scores range from 1 to 5, with a score of 1 indicating good water quality and a score of 5 indicating severe impairment.

\* No score determined

### **Indiana's 2000-2001 Unified Watershed Assessment (UWA)**

During summer 1999 the UWA workgroup used additional layers of information to identify the **resource concerns and stressors** for each of the 361 11-digit watersheds in Indiana. Examination of the human activities that have the potential to impact the ecosystem will help planners to focus on those areas where restoration may be most critical. Organizations can identify opportunities to use their programs and resources to address those areas.

This focusing process will illuminate areas where the interests of two or more partner agencies may converge. It is intended that this will lead to more effective allocation of resources for restoration and protection activities. At the local level, this information can assist groups to prioritize watershed activities and provide some discussion points for planning.

This amended assessment has the following benefits:

- ◆ Provides a logical process for targeting funds, which may be expanded or updated without changing the basic framework.
- ◆ Provides information at a finer resolution (11-digit hydrologic units) to agencies and local groups interested in watershed assessment.
- ◆ Identifies data gaps.
- ◆ Can be used as a compliment to other assessments, such as the 305(b) Report and 303(d) List.

Table 2-2 and Figure 2-1 show the results of the 2000-2001 UWA for the St. Marys Watershed watershed.

### **3 Identification of Impaired Waters**

Section 303(d) of the Clean Water Act requires states to identify waters that do not or are not expected to meet applicable water quality standards with federal technology based standards alone. States are also required to develop a priority ranking for these waters taking into account the severity of the pollution and the designated uses of the waters. EPA approved Indiana's 303(d) list on February 16, 1999.

Once the Section 303(d) list and ranking of waters is completed, the states are required to develop Total Maximum Daily Loads (TMDLs) for these waters in order to achieve compliance with the water quality standards. The TMDL is an allocation that determines the point and nonpoint source (plus margin of safety) load reductions required in order for the waterbody to meet water quality standards.

IDEM's Office of Water Quality has and continues to perform point source waste load allocations for receiving waters. However, during the summer of 1998, extensive data were collected in the St Marys River Watershed in order to specifically address Section 303(d) listed streams and TMDLs in the watershed. Currently, the data from this sampling are being evaluated to determine how to address the Section 303(d) listed waterbodies. Part I of the WRAS briefly outlines IDEM's strategy for developing TMDLs.

The following St Marys River Watershed waterbodies are on Indiana's 1998 Clean Water Act Section 303(d) list submitted and approved by EPA 303(d) list (Figure 3-1):

- .. **Blue Creek** for dissolved oxygen violations
- .. **St Marys River** for Fish Consumption Advisory (PCB, and Mercury)

### **4 Priority Issues and Recommended Management Strategies**

Part I provided the existing water quality information for the St Marys River Watershed and Part II lists priority issues and concerns from local, state, and federal stakeholders in the watershed. This section pulls together the priority issues and concerns held by all stakeholders and recommends management strategies. Underlying all discussions of priority issues and concerns is the fact that improving water quality in the St Marys River Watershed will also enhance the natural and recreational values of St Marys River. Each subsection below focuses on a single priority issue.

#### **4.1 Data\Information and Targeting**

Stakeholder groups identified a need for more water quality data and information in order to prioritize and target specific areas of the St Marys River watershed. In addition to targeting areas, stakeholders identified the need for more data and information about the actual impact on water quality from nonpoint sources. Success in restoring water quality in the St Marys River Watershed is fundamentally based on identifying the specific geographic problem areas; identifying all sources contributing to the impairment of the waterbody; and quantifying the contribution of a pollutant by each source.

**Recommended Management Strategy 1:** In December 1999 the Adams County Soil and Water Conservation District will begin a volunteer water quality monitoring program. This work is being done



as part of a 319 grant from IDEM. The grant specifically targeting nutrient management in the St Marys River watershed. Information gained from this volunteer monitoring will be included in the Watershed Action Strategy for the St Marys River watershed.

**Recommended Management Strategy 2:** Through the development of Total Maximum Daily Loads (TMDLs) for impaired waterbodies in the St Marys River watershed, all sources contributing to the impairment of a waterbody will be identified and quantified in terms of their contribution to the waterbody. This includes gathering more data and information on nonpoint sources of water pollution. Throughout the TMDL process, information and feedback from watershed stakeholders will be required in order to generate appropriate allocation scenarios. The result of developing TMDLs will be an understanding of the impact of nonpoint sources on water quality in the watershed.

**Recommended Management Strategy 3:** As discussed in Part I, there has been little coordination between individual volunteer water quality monitoring groups within the St Marys River watershed. In addition, a database that would hold the volunteer water quality monitoring data for the St Marys River Watershed does not exist. However, Hoosier Riverwatch and IDEM are currently working on a partnership to develop a statewide volunteer monitoring database.

## **4.2 Streambank Erosion and Stabilization**

The cutting and erosion of streambanks within the St Marys River Watershed was identified by many local, state, and federal stakeholders as a major concern. This cutting and erosion increases the sediment load in waterbodies and directly impacts the scenic and recreational values of waterbodies in the St Marys River watershed. Streambank cutting and erosion is often a function of many factors that include stream energy and velocity, flooding, and land management. Increased drainage in headwater streams and ditches increases stream energies during rainfall events and often leads to increased streambank cutting and erosion downstream. Hence, this problem is not easily solved.

**Recommended Management Strategy:** The Office of Water Quality's (IDEM) primary mission is water quality; specifically, what is in the water. It is not the role of the Office of Water Quality to spearhead an effort to address streambank erosion/cutting and flooding. However, the Office of Water Quality can suggest ways to approach this difficult problem.

Structural stabilization of specific streambank areas in the St Marys River Watershed may solve problems on a temporary basis. However, a comprehensive understanding of drainage, stream flows and energies, and land management practices is required to adequately approach this problem. Conservation partners (local, state, and federal) are actively working within their specific geographic areas (typically at the county level); however, this may not facilitate solving the streambank cutting and erosion problems because efforts may not be coordinated between headwater and downstream areas. For example, the Maumee River Basin Commission has been working on flood control. One effort being developed is taking areas of known flooding and removing that area from agricultural production. These areas are then developed into filterstrip areas. This can help reduce sediment, nutrient, and pesticide loading.

## **4.3 Failing Septic Systems and Straight Pipe Discharges**

Local county health departments and other stakeholders have identified failing septic systems and straight pipe discharge from septic tanks as significant sources of water pollution in the St Marys River

watershed. Straight pipe discharges from septic tanks and septic tanks connected to drainage tiles are illegal (327 IAC 5-1-1.5); however, these practices are ongoing in the St Marys River watershed.

**Recommended Management Strategy:** To further educational efforts, the direct impact of communities discharging their septic tank effluent to waterbodies needs to be adequately characterized. This will involve coordination between the Office of Water Quality, local health departments, Indiana State Department of Health, and other stakeholders. The option of choice to eliminate the illegal discharges will be a cooperative effort between homeowners and local, State, and Federal stakeholders. If a cooperative solution can not be reached, illegal dischargers will be required to cease discharge until they obtain an appropriate NPDES permit.

#### **4.4 Water Quality - General**

The Clean Water Act Section 303(d) list presented in Section 6.3 lists water quality limited waterbodies for the St Marys River watershed

**Recommended Management Strategy:** The Clean Water Act requires states to complete TMDLs for waterbodies listed on the Section 303(d) list. The Office of Water Quality is currently evaluating and exploring the modeling process and data needs required to complete TMDLs for the Section 303(d) listed waterbodies. Completion of a TMDL will involve loading allocations of a pollutant to both point and nonpoint sources. The TMDL development process is in its early stages for the St Marys River watershed. This will involve meetings with stakeholder groups linked to the Section 303(d) waterbodies. As TMDLs are developed, this Watershed Restoration Action Strategy will be amended to incorporate the final TMDLs.

#### **4.5 Fish Consumption Advisories**

As noted in Part I and Part II, fish consumption advisories are clearly major concerns and priority issues within the St Marys River watershed.

**Recommended Management Strategy 1:** The St Marys River fish consumption advisories are related to PCB contamination and mercury; continued monitoring will give a better assessment of these problems and corrective actions that may be taken. Also, development of TMDLs, as addressed in Section 4.4, will be a primary strategy.

#### **4.6 Nonpoint Source Pollution - General**

Nonpoint source pollution contributions are often difficult to assess or quantify. Currently, loadings of nonpoint source pollutants to water are often inferred by examination of land use practices, without actual measurements. In addition, the actual water quality impairments related to nonpoint source pollutants have not been well characterized in the St Marys River watershed. Finally, very few regulatory control mechanisms exist to control nonpoint source pollution.

**Recommended Management Strategy 1:** Through the TMDL development process, the Office of Water Quality will identify, assess, and quantify nonpoint source pollutant loadings to impaired waterbodies. In order to accomplish this task, the Office of Water Quality will work closely with local, state, and federal stakeholders at the watershed and subwatershed level. Loading scenarios for nonpoint source pollutants will be developed by the Office of Water Quality and reviewed by local,

state, and federal stakeholders. Implementation of nonpoint source controls will involve a blend of funding assistance and regulatory action, where applicable.

**Recommended Management Strategy 2:** Numerous funding mechanisms, such as Conservation Reserve Program, Environmental Quality Incentive Program, Lake and River Enhancement program, and 319(h) grants, exist to promote practices to reduce nonpoint source pollution in the watershed. In addition, to effectively address nonpoint source pollution in the watershed, the prioritization and targeting discussed previously in Part II should be used to allocate further application of resources.

**Recommended Management Strategy 3:** The St Marys River Watershed has high livestock inventories. Although not shown in Part I due to disclosure problems, this watershed has counties that rank in the top ten counties in Indiana for hogs and pigs and poultry. Most of the watershed is in agricultural production (84%, see Part 1 - section 2.2.1). In an effort to better understand the impact of livestock and waste management and crop production management practices, the Allen County and Adams County Soil and Water Conservation Districts are working with IDEM through 319 grants to identify concerns and work with agricultural producers to address these concerns.

## **4.7 Point Sources - General**

Illegal point source discharges, such as tiles discharging septic tank effluent, exist in the watershed.

**Recommended Management Strategy:** The Permitting and Compliance Branch of the Office of Water Quality is responsible for issuing and monitoring compliance of NPDES permit holders. Clearly, more emphasis and resources are needed to identify and correct illegal point sources and non-complying point sources. Improving compliance of NPDES dischargers and identifying illegal dischargers will involve fostering a working relationship with other local, State, and Federal stakeholders to monitor compliance and report unusual discharges or stream appearance. In regards to illegal discharges, the Office of Water Quality will work with local, state, and federal stakeholders to identify and eliminate these sources of water pollution.

# **5 Future Expectations and Actions**

As discussed in Part I, this Watershed Restoration Action Strategy is intended to be a fluid, living document that will be revised or amended as new information becomes available. Section 5.1 discusses expectations derived from the Strategy and how progress will be measured. Specific revisions and amendments to the Watershed Restoration Action Strategy are discussed in Section 5.2. Finally, the Watershed Restoration Action Strategy will be reviewed by all stakeholders before it becomes final, as described in Section 5.3.

## **5.1 Expectations and Measuring Progress**

The St Marys River Strategy provides a starting point to address water quality concerns held by local, State, and Federal stakeholders. Part II provides recommended management strategies to address these concerns.

Measurement of progress is critical to the success of any plan. Water quality improvements will not take place overnight. Measuring progress in terms of water quality will be provided through the Office of Water Quality Assessment Branch's rotating basin-monitoring strategy. This will allow an assessment of progress in improving water quality.

## **5.2 Expected Revisions and Amendments**

This Watershed Restoration Action Strategy is intended to provide a starting point to improve water quality and measure the improvement. Hence, this document will require revisions and amendments as new information becomes available. The future revisions and amendments have been listed in section 5.2.1.

### **5.2.1 Long-Term Revisions and Amendments**

The Office of Water Quality is moving toward adopting a watershed management approach to solve water quality problems. Part of the watershed approach is the use of a rotating basin management cycle. The Assessment Branch of the Office of Water Quality has already adopted this rotating basin cycle in its intensive monitoring and assessment of Indiana waterbodies (this is in addition to the already established fixed monitoring station monitoring which occurs on a monthly basis). Based on the cycle the Assessment Branch is using, the next intensive monitoring of the St Marys River Watershed will occur during the sampling season of 2000. The information from the 2000 monitoring effort will be incorporated into the Watershed Restoration Action Strategy.

In addition, the Watershed Restoration Action Strategy may be revised or amended prior to 2000, if sufficient information becomes available.

## **5.3 Review of the Watershed Restoration Action Strategy**

Before this Watershed Restoration Action Strategy becomes final, it will undergo rigorous review. The first stage of review will be performed internally by the Office of Water Quality. Once the Watershed Restoration Action Strategy has been revised to address internal Office of Water Quality comments, it will be circulated to local, state, and federal stakeholders in the watershed and meetings within the watershed will be held to discuss the document. Written comments from local, State, and Federal stakeholders will be addressed and the Watershed Restoration Action Strategy will again be revised to incorporate applicable comments. Once internal and external comments have been addressed, the final version of the Watershed Restoration Action Strategy will be released.

TABLE 2-2

HYDROLOGIC UNIT SCORES for Each Parameter Used in the Unified Watershed Assessment [2000-2001]																
11 Digit Hydrologic Unit		Mussel Diversity and Occurrence	Aquatic Life Use Support	Recreational Use Attainment	Stream Fishery	Lake Fishery	Eurasian Milfoil Infestation Status	Lake Trophic Status	Critical Biodiversity Resource	Aquifer Vulnerability	Population Using Surface Water for Drinking Water	Residential Septic System Density	Degree of Urbanization	Density of Livestock	% Cropland	Mineral Extraction Activities
St Marys	04100004030	nd	nd	nd	nd	nd	nd	nd	1	5	4	1	1	5	5	3
	04100004040	nd	nd	nd	nd	nd	nd	nd	2	5	4	2	2	5	5	3
	04100004050	nd	nd	nd	nd	nd	nd	nd	2	5	4	3	2	5	5	3
	04100004060	nd	nd	nd	5	nd	nd	nd	3	4	4	4	3	4	3	2

Figure 2-1  
**St. Marys, Upper Maumee & Auglaize Watersheds**

